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Rabbits are also tracked in the snow to their refuges in hollow logs, etc., whence they are drawn with a straight poker (*hnhnPwidni*) corresponding to the crooked stick of other tribes. This is a thin pointed stick more than a meter long, nicked for a distance of 10 cm. at its tip. When thrust into the log, it is twisted about until these barbs catch in the rabbit's fur. When the rabbit is drawn out, the hunter locates the heart, pinches it, and with a sharp yank ruptures it.

Traps are placed on the rodent trails in the fields and near storehouses to catch the squirrels and rats which rust up the corn, tear their way into the storehouses, etc. Snakes and birds are sometimes found in these devices, but no attempt is made to trap or snare larger game. A stick rests in the fork of an upright stick, 25 cm. long, with one end propping up the deadfall weight, a large flat stone (Fig. 4). A cord tied

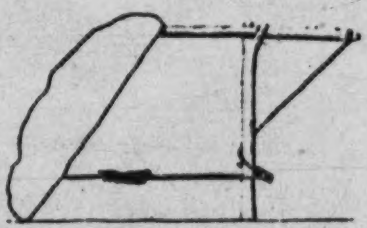

Fig. 4 (80.2–1225). A Rodent Trap.

to its other end has a short stick attached to it. The cord is carried half around the upright, so that one end of the short stick rests against it. The trigger stick is propped between the stone and the other end of the short stick; the tension of the cord holding it in unstable equilibrium. The trap (*gwee'ónia*, something ——) is placed on the trail, with wings of brush arranged so that the rodent must pass under the deadfall. It is baited with dried peaches or mescal pulp tied firmly to the trigger.

Turkeys, found on the plateau, especially near Pine Spring, doves, and quail, as well as the eggs of the last are taken for food. Other birds and their eggs are not eaten.[1] Fish are not eaten.

Dogs are sometimes used in hunting, for driving rabbits into hollow logs whence they could be chopped out, or for following wounded deer over hard ground. The dog is loosed on the trail, to pursue and hold the

[1] Unlike the White Mountain Apache, the Havasupai do not build fires under trees in which doves and quail roost in order to club the dazed birds.

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Yavapai, Luiseño, Salinan, Maidu, Achomawi and Atsugewi,[1] Kombo (Yana or Yahi), Paviotso, Wind River and Lemhi Shoshoni, Chopunish (a group at the eastern edge of the Nez Percé reservation), and Crow.[2] There are doubtless others.

Communal rabbit drives are probably very common in the Southeast and the Basin, but records of the fact elude a search. They are recorded as the practice of the Navaho, Acoma, Zuñi Hopi, Havasupai, Yavapai, Pima, Southern Diegueño, Luiseño, Shivwits, Gosiute, Paviotso, Washo, Northern and Southern Maidu, Achomawi and Atsugewi, and probably Walapai, Mohave, Uintah, and Salinan.[3] There is some variation in the procedure: the Paviotso, Havasupai, Yavapai, and Hopi hunters form in a line and drive in a straight course; the Shivwits, Navaho, Pima, and again the Hopi form a circle. The Washo, Paviotso, and Shivwits have a special director of the hunt; the Havasupai do not.

The rabbits are frequently driven into nets: Walapai, Mohave, Southern Diegueño, Luiseño, Salinan, Shivwits, Uintah Ute, Paviotso, Washo, Northern Maidu, Achomawi and Atsugewi. This distribution omits the Southwestern tribes, except for those on its western fringe.

The characteristic curved rabbit club was not in universal use. It is the weapon of the Hopi, Zuñi, Navaho, Mohave, Southern Diegueño, Luiseño, and Cahuilla. The Zuñi, at least, also use straight billets of wood. Several others are known to use clubs of some sort (Yavapai, Pima, Western (?) Apache, Achomawi, and Atsugewi) but the Shivwits and Havasupai use none at all.[4]

Many tribes in this area use a stick provided with a crook to draw rabbits and other rodents from their hiding places. But it is recorded only for the Yavapai, Tonto Apache, and Shivwits Paiute. I have also a recollection of seeing this tool among the Navaho, but a Havasupai informant referred to the use of a straight stick provided with little barbs like their own. The same straight stick is used by the Zuñi and probably as a second type by the Shivwits.[5]

The Navaho use a trap identical with that of the Havasupai, and this is true of the Hopi, if I correctly interpret the description given by Mason based on information from Hough.[6]

[1] Cremony, 39; Franciscan Fathers, 375; Matthews, (d), 217; Stevenson, M. C., (b), 439-441; Hough, (e), 285; Corbusier, 328; Sparkman, 197; Mason, J. A., (a), 124; Dixon, (a), 192-193; Powers, 271; Lowie, (i), 197, 199; (a), 185; Lewis and Clark, IV, 371; V, 38, 40; Lowie, (b), 210.

[2] Franciscan Fathers, 324, 476; Sedgwick, ch. II; Bourke, (c), 345; Hough, (e), 174; Chamberlain, 338; Russell, (d), 59; Spier, (d), 337; Sparkman, 198; Lowie, (i), 198-199; Powell, 127; Chamberlin, (b), 336; Barrett, (b), 11-12; Dixon, (a), 195; Faye, 38; Dixon, (e), 213; Whipple, 115; Mason, J. A., (a), 143; Mason, O. T., (e), 209.

[3] Hough, (e), 285, 287; Mohave specimen in the Museum of Anthropology, University of California; Barrows, 50; Bourke, (b), 60.

[4] Corbusier, 328; Smart, 416; Powell, 123; Cushing, (d), 491; Lowie, (i), 198.

[5] Franciscan Fathers, 322; Mason, O. T., (j), 472.

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Bows, Arrows, and Quivers

Both the self and the sinew-backed bow are used, although the former is more common. Arrows are either arrow reeds with willow foreshafts, or entirely of wood. The position of the bowman is three-quarters face toward his quarry with the bow held vertically. It is gripped slightly below the center. The arrow is held in position with the left forefinger until ready to shoot; then it rests on that hand to the left of the bow. It is pulled back at shoulder level and the bow held rigid while it is let fly. A variety of the secondary release[1] is used, in which the arrow is grasped well forward in the feathering while the first and second finger tips bear on the string (Fig. 21). Either reed or wooden arrows are used with self or sinew-backed bows. Either bow will carry about 175

Fig. 21

Fig. 22

Fig. 21. The Variant of the Secondary Form of Arrow Release used by the Havasupai.
Fig. 22. Section of a Sinew-Backed Bow.

m., but the effective range is 30 to 45 m. At this range the arrow would penetrate a deer from 15 to 25 cm. At a shorter distance an arrow could be driven completely through a horse. Mountain sheep have been killed when shooting down from a hundred meter cliff. Allowance is made for windage; but rain and snow are said to have no effect on the flight. No prayer is said when shooting, nor will sickness or menstruating women in the house where it is kept affect the power of a bow. The arrow was carefully withdrawn after the kill; heads and feathers of broken arrows were saved.

The best wood for bows (*hapú'"*) is called *kap'ágima'a*, or *kap'á*, or *puima'd*, which is probably the ash (*Fraxinus anomala* Torr.). A young tree, about 1.25 m. tall, is selected, and its branches trimmed close so that it will grow straight. In two years this is ready to cut, for the trunk

[1] Morse, 148–198.

1:Spier E-5 (1918) 1928
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322 411 is then 3 to 5 cm. through. Shaping proceeds without waiting for the pole to season. A good bow should bear a dark streak (medullary ray?) along its inner face, not on the back: such a bow will not easily break. The pole is cut to the proper length for a bow, six spans (thumb to middle finger), measured three toward each end from the middle. Some bows are only five spans. After the bark is removed, the pole is trimmed to the lines shown in Fig. 22, leaving the back in its natural state. Frequent sighting along the bow keeps the trimming symmetrical. The [412] cutting is done with a stone knife and finally rubbed smooth with a grit-stone. The width at the grip should be that of two fingers (first and middle fingers lying flat); at the ends one finger wide. Its thickness is not measured. Fiber tension in the green bow gives a marked curve opposite to that when strung. The bow is set aside to season for a month: if it is strung sooner it is likely to acquire a permanent curve. When ready for stringing the nock is cut into the edge at a convenient point. There is no wrapping for a grip, nor are decorative marks or paint applied.

411 322 237 Oak is used as well as ash for sinew-backed bows (*mĭsmdᵉ*, sinewed?): it is grown in the same way. Mesquite is also used, if it contains a dark streak. The bow resembles the self bow, but it is somewhat shorter, five spans, and only half as thick, although the width is the same. After seasoning for two months or more until it is thoroughly dry, it is ready for the sinew reinforcement. Nocks are first cut. The back is scraped as smooth as possible and fine lines are scratched on it longitudinally, [412] using a stone flake with a serrated edge. After glue is applied over half the back, a broad sinew is laid on beginning at the middle, stretching it toward the tip. This is rubbed in the same direction with a smooth stick in order to make it adhere. The process is repeated for the other half of the bow, the sinew layers lapping at the middle. Three more layers are similarly added, setting the bow in the sun to dry partially before each application. The sinew extends over the back quite to the inner face. The first two layers are brought over each end and down the face for about 1 cm. The ends of the last two layers are left free, but twisted together. A sinew is bound in the nocks to hold the sinew backing fast. When dry, the grip is bound with a buckskin thong, centering slightly [439] below the middle. Red cloth, obtained from the Hopi, is passed back [531] and forth longitudinally through this binding on the inside face, to produce a checkered effect. Red paint is used in default of cloth. The 411 sinew layers part from the wood when the bow is old. This is checked by 237 binding at intervals with sinew. This bow is always kept strung, al-

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though the string is loosened somewhat when not in use. New bow-strings are a necessity, because a worn string might snap and the tension of the sinew backing is such as to reverse the arc, break the wood, and "perhaps drive a broken end into a man's side, killing him." The bow is kept in a buckskin case; a tube with a single seam. Specimens of such

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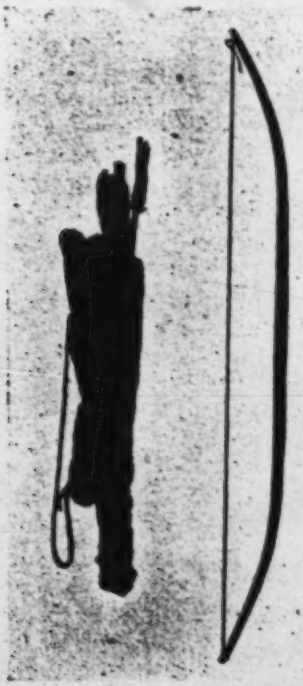

Fig. 23 (50.2-1601, 1599). Quiver and Self-Bow.

bows are not extant. No trussed or compound bow of any other description was used, but the trussed bow is credited to the Navaho. [177]

The bowstring (*ĭmĕcma hăpudjĭndgid*) is always sinew (*ĭmĕcma'*); leather and yucca fibers are never used. The best sinew is that from the hind leg of a deer or mountain sheep. (Tendons are pulled from the hind legs from knee to hock. Others are stripped from both sides of the deer's backbone beginning at the withers, leaving them attached to each

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411 other at the forward end. These are hung up to dry.) The sinew is
237 soaked in water over night, scraped with the back of a knife, and separated into fibers when partly dry. To make the bowstring, two bundles of these are rolled together between palm and thigh, new lengths being added by rolling in as needed. Three bundles were preferable; these were rolled together, never braided. The bowstring is tied permanently to the upper end; the hitch for the lower end is shown in Fig. 24a. This
[556] is a poor man's style; a rich man would tie a length of buckskin to the loose end and continue the wrapping for another 5 cm., fastening with a
411 half-hitch. To string the bow its upper end is set under the right instep, and while the lower end rests in the left hand, the bow is sprung by pressing with the left knee; then the right hand fastens the string. When strung, the spring of the bow is tried, and a song to the bow and string is chanted: hápdagwlôà (Let this be strong; let this not break).

[788]

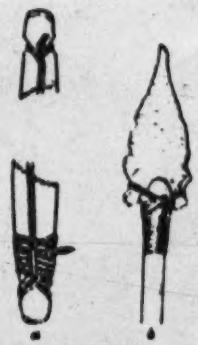

Fig. 24 (50.2-1221, 1223). a, Ties for Bowstring; b, Method of securing Arrowhead to Shaft.

The wrist protector (*saldmé*) is simply a broad band of buckskin encircling the wrist, somewhat trimmed to fit the heel of the hand. It is fastened by taking up the slack in a loop which passes through both ends of the band.

Boys sometimes use small bows of men's type but the normal boy's bow is D-shaped. One in the collection measures 60 cm. from tip to tip, the chord of the arc 25 cm.; another 65 by 25 cm. Boys use only reed arrows, with sharpened foreshafts, and feathered with the plumage of the hawk, flicker, etc.

411 Reed arrows (*dp'a"dt'a'* or *dt'a"dp'ad'a*; *dp'a"a*, arrow) are most
322 common. Arrow reeds (*dt'd'*) are gathered green. In order to straighten them, the crooked part is pressed on hot ashes placed on a flat stone, or in the groove of an arrow-straightener (*doθúwd*). Stones are also heated in the fire for this purpose.[1] The joints are then trimmed. Wooden arrows (*dp'd'a'i'i; i'i*, wood) are made of an especially hard willow (*dmavdlá*, probably desert willow). These branches were peeled and left in the sun until partially dry when they could be straightened with a wrench, never by heating. The wrench (*múkwapadjid mödëmtdid*) is
[321] a mountain sheep shoulder blade or horn in which several holes have
[412] been drilled.

[1] The shaft is not wet with the tongue at the point to be heated as the White Mountain Apache do.

1: Spier E-5 (1918) 1928
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been drilled. Straightness is determined by sighting. The arrows are next cut to proper length; for use with the self bow, from tip of forefinger to top of biceps; for the sinew-backed bow, from tip of middle finger to bottom of biceps. (This may apply to wooden arrows only). Reed arrows in the collection measure 75 to 76 cm., of which 15 cm. is foreshaft; willow arrows, 70 to 73 cm.; and boys' reed arrows, 72 to 77 cm. with 9to 12 cm. foreshafts. Willow shafts are trimmed with a knife which like all knife movements is toward the body—and then rubbed between two grooved gritstones (*patamâlia*) of pumice held in the hand. The shaft is a true cylinder of the diameter of arrow reeds except for a slimmer section where the feathers will be bound and for a flare at the nock. The nock (*padjâtaûiga*) is next cut; in a reed arrow this comes just above a joint. The foreshaft for the reed arrow is also willow, trimmed to size, about 15 to 20 cm. long, and pointed at both ends. After this is painted red, it is glued into the pith channel of the reed. The end of the shaft is then wrapped for 2 to 3 cm. with sinew, fastened with glue, to prevent it splitting. Finally the foreshaft is split to receive the arrowhead, which is wet in the mouth, glued in, and tied on with sinew, which is not, however, glued (Fig. 24b). It is prayed to that it may stay tight. Many arrows, used for small game, have simply a sharpened foreshaft.

Stone arrowheads range from 3 to 6 cm. in length; the smaller are placed on reed arrows, the larger on wooden shafts. These are triangular, with a deep, square notch in the base, and with the cutting edges reaching almost to the base. If an arrowhead tends to work loose, it is nicked well up the side to aid in retying. Stone heads were flaked on the heel of the hand with an antler tip cylinder. Bone or antler arrowheads are not used. Blunt points for stunning small game are not manufactured, but a corncob may be placed on the point of the foreshaft for this purpose.[1]

Willow arrows are often decorated with one to three zigzag or wavy grooves (*dpded'ui'ga*) running the length of the shaft, representing lightning (*vltal'dja*). These are made with a tool consisting of a wooden block with a groove across one face into which there protrudes the point of a knife thrust through from the back. The shaft is drawn through the groove, rocking it slightly, so that the point may trace a sinuous line.

The eagle and hawk furnish the best feathers for arrows, those of a smaller blue and gray hawk and possibly other birds are also used. Young

[1] It is curious that the metal points that are made have the series of rounded shoulders where the tang joins the blade which occur in early trade examples found in eastern United States.

1:Spier E-5 (1918) 1928
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Young

231 eagles and hawks are captured in the nest and raised in captivity until
237 the plumes may be plucked. A shade is erected over a replica of the nest
417 in which the helpless bird is placed; when he grows he is tethered. Preferably a cage is built which resembles the frame of a sweatlodge but is somewhat higher. Brush is placed on top for shade. Cross sticks inside support a nest, on a level with which is a doorway for feeding.

Feathers are split beginning at the tip, and the narrower vane dis-
237 carded. The shaft of the wider vane is scraped thin and trimmed. The
●411 whole length of the plume is used; these are about 13 cm. long for reed
531 arrows, 23 cm. for willow. The shaft is decorated as shown (Fig. 25) before the vanes are placed; the bands are 1 cm. wide on reed arrows, 2 cm. on willow. Sometimes the whole distance covered by the vanes (or most of it) is colored red alone, and occasionally the entire shaft is painted red. This painting is purely decorative: these are not property

Fig. 25 (50.2-1222). Method of Feathering and Painting an Arrowshaft. The colors used are indicated as follows: heavy black, black; heavy stippling, green; light stippling, red.

marks, for a man could always recognise his own arrows. Glue is applied
411 at the points where the vanes are to be bound on, and also over the paint, where it serves as a varnish. Sinew is chewed and drawn between the teeth until it is soft, when it is wrapped several times around the nock end by twirling the shaft. A few barbs at the tip of the first vane are caught under the wrapping, then a few of the second vane under the next turn, finally the third, and the wrapping is then completed. The vanes are carefully straightened and the quills of all three simply wrapped with sinew. The sinews are not tied, the glue holding them fast. The edge of the vane is next trimmed back toward the shaft so that it is broader at the tips than the butt,[1] except that the last few barbs at the butt and the down are left long. The ends of the barbs at the tip are cut off square to the shaft. Flight is retarded if the vanes are left broad. Three vanes are always used. Many arrows have one of the vanes in the plane of the nock, but this is not essential. Arrows twirl in flight, but the vanes are never placed spirally. Arrows are left in the sun to dry for

[1] This is not properly shown in the illustration.

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several days, being taken indoors at night; they require attention during this period. As many as twenty or thirty arrows were kept at a time in quivers.

The best quiver (*n,dpûwd*) is made of mountain lion skin.[1] Only rich men have these; poor men are satisfied with the hides of fawns or of the young of mountain sheep. The tanned lion skin is folded lengthwise hair side out and cut as shown in Fig. 26. The edges are turned back outside and sewed together with a running stitch. A circular piece of thick buckskin is sometimes sewed into the base (the neck) end, like the end of a can. A stick of the diameter of an arrow is placed in the

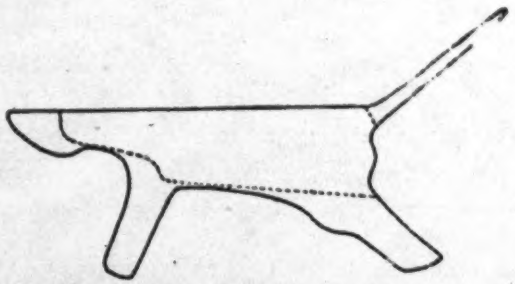

Fig. 26 (50.2-1601). The Pattern for a Mountain Lion Quiver. Based on the specimen shown in Fig. 23.

longitudinal seam where it is bound in with an over and over stitch. The tail hangs free as an ornament. Thongs are attached at quarter points along the stick to suspend the quiver.[2] It hangs obliquely from the right shoulder, under the left arm, with its mouth pointing up and back. It is adjusted so that the midpoint comes at the waist, and a thong is tied about the body to hold the quiver close to the side.

Comparative Notes

The distribution of two types of basketry will be considered here, the conical burden basket and the bi-conical water bottle.

Conical baskets are characteristic of California and the adjacent sections of the Great Basin and the Southwest. Without attempting to canvass thoroughly the literature and collections, I find it in California

[1] The Navaho and Apache look on the mountain lion as a hunting god, and its skin is in demand for quivers (Bourke, (c), 438.)

[2] An identical quiver from the Navaho is figured by Mason, (1) T. (c), Pl. LXXIX, fig. 1. The use of mountain lion skins for quivers is quite widespread in the west, but it may not be universal.

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171 372 Most Southwestern peoples, like the Havasupai, use a simple fire-drill, a single piece of wood. The composite drill, having a short fore-shaft of wood of a special sort set in the end of the drill, occurs in this area among the Navaho. The Hopi use it at least in their New Fire ceremony. Northward it is distributed among the Paviotso, Klamath, Modoc, Washo, Lemhi and Wind River Shoshoni, Crow, Green River Salish, and Snohomish or Snuqualmi.[1] The materials used might be compared. I note that the Havasupai use the flower stalk of bear grass for the hearth, the White Mountain Apache that of *Yucca baccata*, and the Navaho a soft stalk of a large weed. The Shivwits, like the Havasupai, use mesquite for the drill. With regard to the pits on the hearth, the Paviotso prescribe four as the standard number. Similarly of the Navaho hearth, it is said "small holes, sometimes four in number, were cut into it,"[2] and one Havasupai specimen (50.2-1224) has four holes, but this was not specified as standard for them. The Shivwits made pits all along the hearth. It may be that we have here a diffused trait; on the other hand, it may be nothing but an expression of the pattern number, four, obtruding itself on every occasion.

The slow-match, a long roll of cedar or sagebrush bark, is widely distributed through the western plateaus. It is used by the Havasupai and by the Navaho according to them (p. 226), Hopi, White Mountain Apache (?), Wind River and Lemhi Shoshoni, Klamath, Modoc, Thompson, and Nisqually.[3]

285 171 Bark mats or blankets may be in general use throughout the plateaus. The smaller Havasupai type, woven spirally, is also found among the Navaho.[4] Reed mats are used instead by the Pima, Luiseño, Northern Shoshoni,[5] and Maidu.

171 411 237 As Mason and Wissler pointed out years ago the sinew-backed bow is found throughout the western plateaus, in the western Plains, and on the Pacific slope.[6] The following notes will help to define its range with greater precision (Fig. 28).

In the Southwest it is used by the Mescalero, Jicarilla, Southern Ute, Navaho, White Mountain Apache, and Havasupai.[7] There is a prehistoric sinew-wrapped bow from southern Colorado in the Museum

[1]Hough, (c), 583; Fewkes, (d), pl. 3; Lowie, (l), 222; (a), 189; (b), 214; Hough, (a), 536-543; Barrett, (a), 257; Haeberlin und Günther, 15. Washo information from Doctor R. H. Lowie, 1926.
[2]Franciscan Fathers, 65.
[3]Hough, (a), Pl. 20; Lowie, (l), 223; (a), 189; Chamberlin, (a), 35; Barrett, (a), 257; Teit, (a), 297; Haeberlin und Günther, 15.
[4]Franciscan Fathers, 467.
[5]Russell, (d), 134; Sparkman, 210; Dixon, (a), 148; Lowie, (a), 184.
[6]Mason, O. T., (f); Wissler, (a), 159.
[7]Pattie, 164; Guiklard, (b), 261; Hough, (a), 397; Letherman, 203; Mason, O. T., (f), 640, 668, Pl. 79, Fig. 3; Dorsey, G. A., (b), 180; Bourke, (b), 57.

[Text continues on p. 160]

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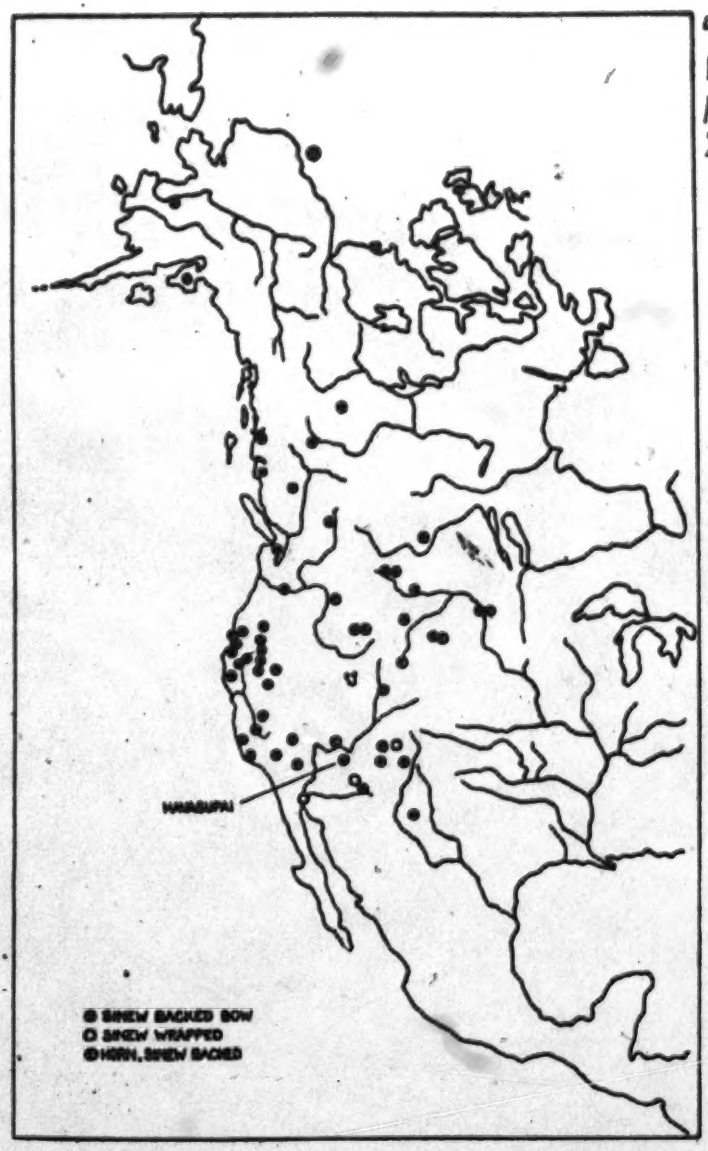

Fig. 28. Distribution of the Sinew-Backed Bow in North America (omitting Eskimo types).

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of Anthropology, University of California (2–3342). The Tonto have a bow "strengthened at points by a wrapping of sinew," and that of the Yuma is also wrapped with sinew.[1] In California and the adjacent part of the Basin the sinew-backed bow is used by the Chemehuevi, Panamint, Kitanemuk (Tejon), Salinan, Yokuts, Wükchumni, Washo, Paviotso, Northern Maidu, Yana (?), Northern Wintun, Eastern Pomo, Atsugewi, Achomawi, Hupa, Yurok, Rogue River peoples, Modoc and Klamath.[2] According to Kroeber this occurs generally in California south to the Tehachapi Range, including the Panamint and Yokuts and a single specimen attributed to the Chumash. The Cahuilla, the Northern and Southern Diegueño did not have the sinew-backed bow, nor did the Hopi, and perhaps Shivwits and Uintah.[3]

To the north and east this form is recorded for the Northern Ute, Lemhi, Crow, Blackfoot, Gros Ventre, Plains-Cree, Cheyenne, the Sioux of Montana, Hidatsa, Takelma, Wishram, Wasco, the natives of Port Discovery on Puget Sound, Middle Columbia Salish, Shuswap (?), Chilcotin, Carrier, Sekanai, Ts'ets'aut, Kenai, and the Tinneh of the lower Yukon River.[4] Mackenzie observed the bow in what is probably Bella Coola territory.[5] Another type, consisting of joined pieces of horn and backed with sinew is known from the Kaibab, Wind River[6] and Lemhi Shoshoni, Cheyenne, Hidatsa, Blackfoot, and Nez Percé. Some of those referred to above may be of horn rather than of wood. The data used here are not sufficient to distinguish between the wide bows of the Pacific slope and the slender variety of the Basin and Plains, as O. T. Mason does.

The Eskimo have still another form of the sinew-backed bow, which commonly has a cable of sinews extending along the back. This is known from Baffin Land to East Cape, Siberia. The trussed bow is also credited to the Navaho by the Havasupai. Compound bows are widely distributed in Siberia and other parts of the Old World.

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There is some suggestion that the length of self bows increases in the direction of Baja California. The relevant data (chiefly approxima-

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[1]Smart, 418; Trippel, 576.

[2]Whipple, Ewbank, and Turner, 32; credited to the Chemehuevi by the Southern Diegueño [Spier, (d), 350]; Coville, 360; Mason, O. T., (f), Pl. 63, Figs. 2, 3, 4; Pl. 93; 675; Mason, J. A., (a), 142; Powers, 373; Barrett, (b), 16; Lowie, (i), 245; Snyder, 327; Dixon, (a), 202; Pope, 330, 341, Pl. 52. Fig. 3; Pl. 48, Fig. 15; 337, Pl. 47, Fig. 8. Pomo data from Dr. Edwin Loeb; Wükchumni from Miss Ann Gayton. Dixon, (c), 213; Barrett, (a), 346; Quarterly Oregon Historical Society, 7, 1906, 170.

[3]Kroeber, (g), 58; Spier, (e), 330; Lowie, (i), 245.

[4]Culin, (a), 96; Lowie, (a), 175, 191; Thwaites, III, 19–20; Lowie, (g), 230; Wissler, (a), 155, 180; Kroeber, (b), 180; Skinner, 83; Grinnell, (b), I, 174. Pope, Pl. 48, Fig. 14, 340; Sapir, (a), 272; Mason, O. T., (f), Pl. 62, Figs. 2, 3; 676, 677; Teit, (c), 516, 782; ms. on Middle Columbia Salish; Morice, (b), 58, 59; Boas, (b), 663; Wasco specimen, Field Museum no. 60491.

[5]Mackenzie, II, 311.

[6]Powell, 128; Lowie, (i), 246.

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tions) at hand are: Maidu, 1 m., Salinan, 91 cm., Havasupai, 91 to 112, Western Apache, 162, Yavapai, 137, Mohave, 122 to 182, Pima, 135, Cahuilla, 122 to 137, Luiseño, 152, Southern Diegueño, 100 to 120, Cocopa, 182 to 243, Pipi[1] and Lower California Indians, 182, and Pericues, "long."[2] The exception here is the Southern Diegueño.

Mohave, Navaho, and Southern Diegueño bows at least are cut from the wood in the same way as the Havasupai. That is, the rounded back of the bow is the exterior of the tree limb, the interior is cut flat giving a trapezoidal cross-section. This may not be general.[3]

The Navaho use the same bowstring hitches as the Havasupai and also attach a length of buckskin to the string. The bowguard or wrist protector is widely used. In this area it is recorded for the Yavapai, Tonto, Havasupai, Navaho, Hopi, Mohave, Pima, Southern Diegueño, Paviotso, and Northern Shoshoni.[4]

The arrow wrench may be quite widely used. O. T. Mason ascribes it to the Plains Indians, the West Coast tribes, and the Eskimo. I have found it recorded among the Navaho, Ute, and Cheyenne,[5] as well as the Havasupai. This is a mountain sheep horn. The Hopi use antelope or goat horn[6]; the Cheyenne bone also.

Reed arrows are apparently restricted in the Southwest and California to the tribes in the direction of the lower Colorado River. The Yavapai, Tonto, Pima, Cocopa, Pipi, Seri, and the Indians of Baja California seem to use only reed arrows[7]; wooden ones are also used by the Navaho, Havasupai, Western and Mescalero Apache, Mohave, Yuma, Cahuilla, Panamint, Luiseño, Southern Diegueño, and Maidu.[8] All other tribes mentioned in the second paragraph below apparently have wooden arrows only. The Havasupai and Luiseño favor the reed, the Cahuilla the wooden arrow. It is interesting that the Paviotso make a wooden arrow with a separate foreshaft in the manner of a reed arrow.[9]

There is also a suggestion that arrows from the lower Colorado and Baja California are longer than elsewhere. This might be expected from

[1]A group on a hundred miles below the mouth of the Gila and below the Cocopa (Pattie, 201).
[2]Dixon, (a), 202; Mason, J. A., (a), 142; Bourke, (b), 57; Whipple, Ewbank, and Turner, 50; Russell, (d), 95; Kroeber, (g), 58; Sparkman, 205; Spier, (e), 350; Chittenden, 204; Bargett 402; North, 238.
[3]Pope, 235, Pl. 46, Fig. 2; 237, Pl. 47, Fig. 7; Spier, (e), 350.
[4]Corbusier, 262; Smart, 418; Shufeldt, (a), 784; Franciscan Fathers, 319; Hough, (a), 246, 298; Whipple, 114; Russell, (d), 163; Spier, (d), 353; Lowie, (i), 245, (a), 192.
[5]Franciscan Fathers, 318; Mason, O. T., (f), 660; Grinnell, (b), I, 179.
[6]Hough, (a), 278.
[7]Whipple, 98; Smart, 418; Russell, (d), 98; Heintzelman, 43; Pattie, 201; McGee, 197, Bargett, 392; North, 238.
[8]Franciscan Fathers, 182, 318; Mason, O. T., (f), 639, 661; Pattie, 164; Trippel, 376; Kroeber, (g), 58; Coville, 360; Sparkman, 205, 206; Spier, (e), 351; Dixon, (a), 203.
[9]Lowie, (i), 246.

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the fact that their bows are longer, but the correlation is not close. Approximate lengths follow—:

	Wood	*Reed*
Maidu	82–87 cm.	
Havasupai	70–73	75 cm.
Western Apache		60
Mohave		very long
Pima		78–85
Luiseño		90
Southern Diegueño	60	74–80
Seri		65
Baja California		95–120
Pericues		90+

Wooden arrows sometimes have shallow longitudinal grooves running along the shaft; these are usually wavy or zigzag. O. T. Mason states that "the Eskimo do not make them, neither do the Northwest Coast Indians. Athapascan, Shoshonean, Siouan, Kiowan tribes are especially given to this practice."[1] The distribution of this feature is wide, but more restricted to a definite area than Mason's generalization would imply. Such grooves are generally used in the Southwest, in the Basin and northern California, and throughout the Plains, but I have found them nowhere else with the exception of the Western Déné. In addition to the literature, I have examined the collections in the American Museum of Natural History and the Museum of Anthropology, University of California, with some care, and somewhat more casually those in the Field Museum, United States National Museum, Museum of the American Indian, Washington State Museum, and the Provincial Museum, Victoria, B. C. It occurs among the following tribes: Yuma, Mohave, Havasupai, Hopi,[2] Zuñi, Western Apache,[3] Navaho,[4] San Ildefonso, Taos, Picuris, Mescalero, Southern Ute and those of Utah, Wind River (?) Shoshoni, Snake of Idaho, Maidu,[5] Wintun, Achomawi, McCloud River, Shasta, Hupa, Yurok, Klamath,[6] Wasco,[7] Rock Creek Sahaptins,[8] Nez Percé, Blackfoot, Western Déné,[9] Crow,[10] Cheyenne

[1] Mason, O. T., (f), 660.
[2] Hough, (c), 288.
[3] Mason, O. T., (f), 664.
[4] Franciscan Fathers, 318.
[5] Dixon, (a), 203.
[6] Mason, (f), 676.
[7] Field Museum, no. 69491.
[8] Washington State Museum specimens 5787 and 5789.
[9] Morice, (b), 55.
[10] Lowie, (b), 220.

[Text continues on p. 164]

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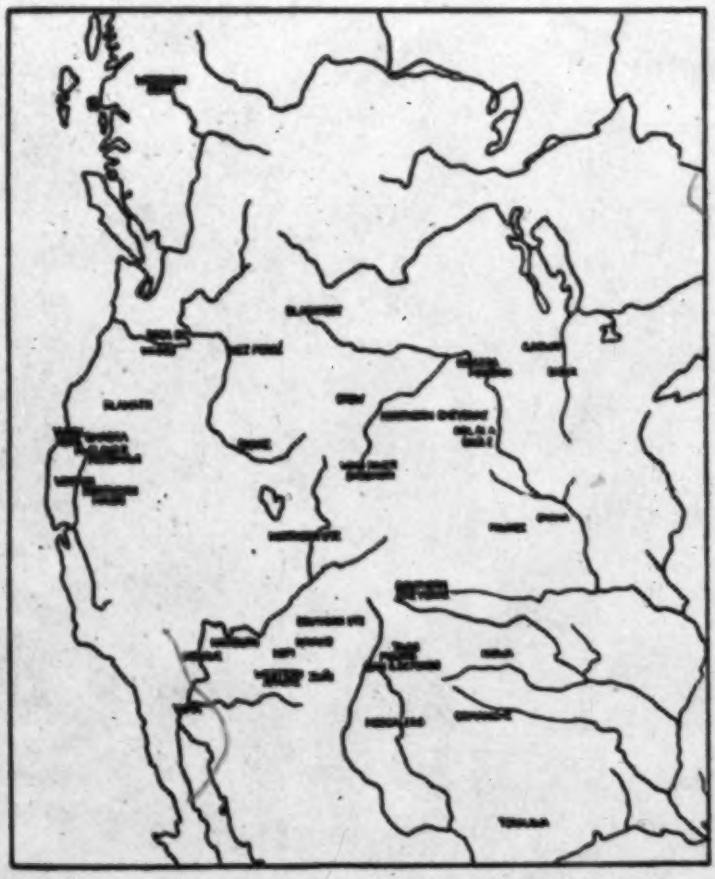

Fig. 29. The Distribution of the Grooved Arrowshaft.

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(both northern and southern groups),[1] Hidatsa, Mandan,[2] Oglala, Brûlé, and other western Sioux, the Sioux of Devil's Lake (Minnesota?), Ojibway of Dakota, Omaha,[3] Pawnee,[4] Kiowa, Comanche, and Tonkawa[5] (Fig. 29).

These grooves range from zigzag to straight lines. While my notes are not sufficiently complete for certainty, there is a suggestion of regional specialization of this feature. That is, Tonkawa, Comanche, and Kiowa examples are straight or nearly so; the others, where we have information, are wavy (Nez Percé, Wasco, Snake, Maidu, Ute, Havasupai, Navaho, Hidatsa, Mandan, and Ojibway). Cheyenne arrows have a straight groove on one side, a zigzag on the other. That from the Sioux of Devil's Lake is straight, but others from the Sioux figured by Mason are wavy or zigzag.

Several explanations are offered: they represent lightning to the Navaho, Havasupai, and Mandan;[6] blood channels to the Western Apache and Pawnee. The last also say that the grooves cause the arrow to adhere to the wound. Those of the Western Déné and Klamath are also styled blood gutters, but I am not sure that the Indians call them that. The Omaha explain them as a device to prevent the arrow from returning to its natural bent, an explanation accepted by Grinnell in connection with the Cheyenne, but the grooves are so shallow, the merest traces, that it is difficult to see how they could function, if a longitudinal groove would serve at all. This seems nothing but a rationalization, not different from the blood-channel explanation.

[1] Grinnell, (a), I, 128.
[2] Mason, O. T. (f), 664.
[3] Fletcher and La Flesche, 421.
[4] Mason, O. T. (f), 674.
[5] Mason, O. T. (f), Plates XLI, 3; XLVI, 1, 2; XLIII, 1, 2, 6; XLIV, 6; XLV, 2, 4, 5; XLVI, 2, 4; XLVII, 2, 4; LXXIV, 2; LXXII, 2; LXXIII, LXXIV, 2; XC.
In these museum collections are arrows from other localities having the grooves: Pomo, Modoc, Chilcotin, Kwakiutl, Cheyenne, Arapaho, Comanche, Ponca, Tohono, and Shuswap. To which Antigua may be added, according, maybe, Eastern Columbians.
[6] This may be Matthews's explanation, not that of the Mandan.

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and scalps. It seems that raids were sporadic, and I gather, may have averaged not more than one a year. During these periods of insecurity, the natives were accustomed to live in the little caves and on the ledges along the cliffside in order to make their escape more easily. 726 722

The Navaho did not raid into the canyon, but they would sometimes drive off the Havasupai horses when the latter were trading in the Hopi villages, or they would descend on some returning, heavily-laden trading party, and kill or despoil them. 721 [439]

Offensive operations did not figure to any extent in Havasupai life, partly because of their numerical inferiority and partly because their material existence was better than that of any of their neighbors, with the exception of the Hopi. War activities do not appear to have offered absorbing interest as a general rule, although prowess in war was a decisive factor in bringing social distinction, i.e., chieftainship, to some. [511]

Weapons are bows and arrows, hatchets, and clubs. The hatchets may only have been iron tools acquired through the Hopi. The club is a single piece of heavy wood, with a round head 10 to 12 cm. in diameter, and devoid of a rawhide cover. This was used with a descending, smashing blow, not at all like the punching stroke of the Mohave with a club of a different shape. A sling is also used, although it was not seriously considered a weapon. Sinyella said, "The last time the Yavapai came I was a young lad. I made a sling and threw rocks at them. I do not know whether I hit any or not; I was high up near the top of the red cliff." 411 [439]

Arrows used in war are said always to have been poisoned. Poisoned arrows are kept in the quiver with the untreated variety. It did not harm the meat of a deer, for example, but this is at odds with the supposed effectiveness of the poison as recounted in the tale of a raid by whites. The poison (*paisdha*) was made of a black substance in the big scorpion, centipedes, red ants, *matglnyué* (a small black bug that bites), jimpson weed, and *qwdgdmund* (a weed growing on the canyon bench). These are mashed, dried, and stored. Soapweed leaves are thrown into the fire to get hot, and wrung to expel the juice. The little finger is wet with this glue, dipped in the powder, and a little is put on arrowhead and foreshaft. A mere scratch is sufficient to kill. 278 411

Armor took the form of a shirt or smock, fitting close around the neck and hanging nearly to the ground. It was composed of two thick buckskins before and two behind; the thicknesses sewed, but not glued, together. A small buckskin was twisted into a thick loose rope and worn around the neck like a muffler. A big buckskin was rolled into a bundle 713

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713 with a thong tied to one side to form a handle. This was carried in the left hand to protect the face. Such armor would turn arrows.

A shield-like device was formed by hanging one or more heavy buckskins like a curtain from a bow held out horizontally before the body. Arrows striking this curtain would either fall harmlessly or hang in it. Men with such temporary shields and those with armor carried 726 clubs in their free hands. They were expected to advance steadily in close formation in the forefront of the attacking party. Others followed with bows drawn closely crouching in this protection. The bearer would lower his curtain-shield an instant while his companions shot, and quickly raise it until they were ready to fire again.

The curtain-shield is credited to the Walapai and Yavapai by my 171 informants. The usual rawhide circular shield (*sūwákwd*) is not made by 411 the Havasupai, although it is said to be used by the Hopi. Slat armor is not made. Spears are not used, but they have been seen in the hands of the Yavapai and Hopi. Cushing, however, credits them with a wooden pike about 125 cm. long, pointed and hardened in the fire.[1]

726 In taking the offensive, as against the Yavapai, they proceed to the neighborhood of the enemies' camp and wait in hiding while a few scout ahead. When scouts are out of contact with their own party, or [198] when they fail to find the enemy, they communicate with one another by calling in imitation of the horned owl, coyote, or screech owl (*ǫdyǭǫd*, a little bigger than a man's fist and having horns). If they locate the enemy, they return without disclosing their presence by such calls. Then all move together, approaching the enemies' camp in the night. The bull-roarer is swung to make the wind blow hard, so that the enemy will flee before the wind. A short time before dawn, some surround the camp, while the others remain waiting for the first flush of daylight. As soon as they can barely see, those in the main body rush into the camp, shouting and clapping their mouths.[2] The enemy, confused with sleep, attempts to flee, but those surrounding the camp wait to catch and club or shoot them. So far as I know it was not customary to take [727] captives. There is no special war leader, either on such raids or in [624] defending the canyon home; those who are chiefs are normally leaders.[3]

Scalps (*ǫdwawid'ǫ*, scalp; *ǫdwdwd*, hair) were taken, the cut being 727 made around the margin of the scalp. "Taking the scalp is like taking the hide of a deer; the man who kills the enemy gets the scalp." (The

[1] Cushing, (a), 550.
[2] Cf. Mohave (Pettis, 133).
[3] Cushing, (a), 551.

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171 537 story.[1] It is possible that this is what Powers means by calling the Northern Maidu clown (Sacramento valley and foothill groups) a "prompter or repeater of the chief."[2] He reports for the Southern Maidu a boy who repeats very utterance of a shaman during his performance[3] and the same occurs among the Klamath. Of the Nez Percé Spinden remarks that

> often a public speaker, or herald, repeated word for word the orations of the chiefs in order that the assembled multitude might hear,[4]

and of another Sahaptin group at Priest Rapids on the Columbia River, Mooney records that speakers talked in a low voice to an "interpreter" who repeated to the audience.[5] The last is also true of the Wishram.

171 726 Like the Havasupai the Pima warriors

> divided into two parties—those who used the bow and those who fought with club and shield.[6]

It would be interesting to know whether this specialization was general in this area.

171 411 At least one type of Southwestern club has a recognizable distribution. This is a cylindrical affair, having a handle of smaller diameter in the line of its axis (Kroeber's "potato-masher" type). It is used with a punching, face-smashing stroke. This seems to be typical of the lower Colorado: Mohave, Chemehuevi, Cahuilla, some Mission Indians, Yuma, Cocopa, Opata, Maricopa, Pima, and Yavapai.[7] Kroeber, however, describes this as the Pueblo type of warclub.[8] The Havasupai ball-headed club is shared with the Cocopa. This is not the well-known type, a ball and handle joined by a rawhide cover, which in this area is used by the Western Apache and Wind River Shoshoni.[9] The Southern Diegueño weapons are a flat curved club and an angular hook.[10]

There is some doubt that the sling is aboriginal in the Southwest, but as the object is widely distributed in Mexico, Central America, and the northern parts of South America, it is possible that it is ancient in the Southwest.[11] It is also found northward through California. The tribes for whom it is recorded are Navaho, Hopi, Western Apache, Havasupai,

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[1] Powell, 116, 128.
[2] Powers, 310; Dixon, (a), 295, 318.
[3] Powers 331; Faye (p. 43) notes a partner or deputy of the captain who speaks in public. This seems to correspond to the chief's assistant of more southerly Californian tribes.
[4] Spinden, 243.
[5] Mooney, (b), 730.
[6] Russell, (d), 120, 202.
[7] Whipple, Parkman, and Turner, 80; Barrows, 80; Hoffman, in Reid, 20; Trippel, 877; Heintzelman, 43; Russell, (d), 66; cf. Bartlett, II, 237; Corbusier, 331.
[8] Kroeber, (a), 298.
[9] Rourke, (b), 80; Lowie, (i), 246.
[10] Taylor, (c), 284.
[11] Means; cf. Hough, in *Handbook of American Indians*, II, 603.

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171 411 Pima, Luiseño, Clear Lake Pomo, Trinity Wintun, Puget Sound Salish, and on southwestern Vancouver Island.[1]

It is well known that armor is used in a wide area of western North 171 America from Bering Straits into the southern continent. The only 713 variety we are concerned with here is a tunic formed of several thicknesses of heavy skin, commonly joined and stiffened by layers of glue and sand. Something of the sort is in use among Havasupai, Navaho, Western (?) Apache, Zuñi, Opata, Aztec, Comanche, Pawnee, Paviotso, Maidu, Atsugewi, Achomawi, Hupa, Yurok, Wailaki, Shasta, Modoc, Klamath, Takelma, Northern Shoshoni, Nez Percé, Chinook, Quinault, Twana, Chimakum, Klallam, Shuswap, Lillooet, Thompson, Nootka, Chilcotin, Carrier, Babine, Sekanai, Loucheux, Hare, Nass, Taku, Chilcat and other Tlingit, and undoubtedly others.[2] The Blackfoot have a tradition of its use. The Pima evidently do not use armor.[3] To the south quilted cotton armor was used by Mexicans, Toltecs, Mayas, Isthmians, and Peruvians, according to Hough. Slat and rod armor reach no farther south than the Maidu: north from this point these types are used by Achomawi, Atsugewi, Shasta, Klamath, Hupa, Takelma, Chinook, Shuswap, Lillooet, Thompson, Chilcotin, Carrier, Babine, Sekanai, and Tlingit.[4]

So far as the information goes the curtain shield is used in the South- 171 west by the Havasupai, Walapai, and Yavapai only. The Thompson 411 use a large piece of stiff elkhide and the Lillooet roll marmot skins thickly around the left arm. The circular shield used in the Plains and Mexico extends into the Southwest among Comanche, Zuñi, Hopi, Navaho, Western Apache, and Pima. Kroeber adds Yuma, Mohave, and Diegueño to this list.[5] In the Basin-Plateau it is known to the Ute, Wind River and Northern Shoshoni, Nez Percé, Shuswap, and Thompson.[6]

The poisoning of arrows may have been more common than the 171 collected data indicate; at any rate it is a widespread custom. One 278 poison of a curious sort suggests that some cases at least are historically 411 connected. This is made of a liver which a rattlesnake has been made to

[1] Franciscan Fathers, 75, 335; Pattie, 130; Bourke, (b), 59; Sparkman, 203; Powers, 215, 241; Kelly, 622; Meares, 176.

[2] Franciscan Fathers, 458; Hough, (b), 626, 631, 642, 645, 646, Pl. 16, 17; Russell, (c), 73; Winship, 848; Bandelier, (a), 70; Lowie, (i), 245; Dixon, (a), 305; (c), 213; Mason, O. T., (a), 230; Kroeber, (c), 399; Gatschet, (b), 98; Lowie, (a), 192; Lewis and Clark, III, 21; Franchère, 253; Quinault information from Mr. Ronald L. Olson; Gibbs, 192; Spinden, 227; Kelly, 633; Teit, (c), 338, 785; (h), 324; (a), 265; Meares, 354; Morice, (a), 217; (b), 140, 149; Krause, 309; Sapir, (a), 274; (b), 157, 255.

[3] Winsor, (a), 163; Russell, (d), 26.

[4] Hough, (b), 631, 640, Pl. 14; Farrand, (a), 647; Sapir, (a), 273.

[5] Kroeber, (a), 208.

[6] Lowie, (i), 242; Lewis and Clark, III, 19. I have not attempted to complete its distribution to the northwest.

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strike (White Mountain Apache, Seri, Northern Maidu[1]), or part of a deer struck by a snake (Shoshoni and Bannock), or a mixture of liver and venom (Paviotso, Teton), liver and the juice of the wild parsnip (Achomawi), the spleen of an animal and pulverized ants (Northern Shoshoni[2]). In several of these cases this is allowed to putrefy: the Yuma also used putrid flesh. Others prepare compounds of poisonous insects and plants (Havasupai, Yavapai,[3] and Wishram[4]). Rattlesnake venom is used by the Southern Diegueño, Blackfoot, Lillooet, and Thompson; rattlesnake blood by the Takelma.[5] In addition to these the Jovas, Opata (and the tribes of Sonora generally), Lipan, Navaho, Cahuilla, the Indians of the vicinity of Santa Barbara, Gosiute,[6] and Snohomish are known to have used poisons.

Scalp taking is general in the Southwest, although it seems everywhere a matter of little concern. It is specifically attributed to Havasupai, Yavapai,[7] Tonto and Pinal Apache, Navaho, Zuñi, Mohave, Yuma, Cocopa, Maricopa, Papago, and Opata.[8] In the Basin we may add the Paiute, Uintah (?) Ute, Wind River and Lemhi Shoshoni, and possibly Paviotso.[9] Kroeber states that scalps were taken in the greater part of California, possibly excepting the Yokuts, Valley Maidu, and Pomo, and surely excepting the tribes of the northwestern area. Powers also excepts the Trinity Wintun although ascribing the practice to other Wintun. I have found records for one of the Mission groups, Saiinan, and the Maidu of the mountains.[10]

Removing the entire scalp in the Havasupai manner, not a small patch, is attributed to the Yavapai. This, according to Kroeber, is the general Californian practice, and, by my own information, that of the Klamath and Wishram further north.

The Havasupai do not take the whole head although it might have been expected. This is common in California (specifically Salinan and Patwin), in the Northwest area, and in Mexico it is noted for the Tepehuane.[11] Friederici believes that scalping is a substitute for head taking stimulated by the whites.[12]

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[1]Dorsey, G. A., (b), 186; Bourke, (h), 38; Bartlett, I, 465; McGee, 250-258; Bandelier, (a), 70, 237; Dixon, (a), 205, 232.
[2]Hoffman, 67-71; Lowie, (i), 245; (a), 195, 192.
[3]Trippel, 570; Corbusier, 332.
[4]Information from Dr. W. D. Strong.
[5]Spier, (e), 353; Teit, (b), 235; (a), 363; Sapir, (a), 373.
[6]Bandelier, (a), 70; Franciscan Fathers, 186; Hooper, 355; Yates, 374; Chamberlin, 368, 384.
[7]According to the Havasupai, although Corbusier (331) denies this.
[8]Smart, 419; Bourke, (d), 26; Franciscan Fathers, 368, 438; Pattie, 132, 139, 165, 199; Parsons, (f), 12; Kroeber, (a), 281; Bartlett, II, 221; Gaillard, 295; Bandelier, (a), 153, 242.
[9]Lowie, (f), 820, 833; (a), 193; (h), 242, 245; Powers, 320.
[10]Kroeber, (o), 207; Powers, 238, 241, 321; Boscana, in Robinson, 308; Mason, J. A., (a), 189; Dixon, (a), 200.
[11]Powers, 231; Bandelier, (a), 95.
[12]Friederici.

2:HHH Y-5 (ca. 1901) 1954 NT14 Pictures Yumans NT14
Havasupai

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The old basket weaver's home, built of poles, bark, brush and discarded clothing

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Mother carrying her baby in a burden basket. Her home is typical of the Havasupai house of a generation ago

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2:1lliff Y-5 (ca.1981) 1954 NT14 Plateau Yumans NT14
Havasupai

487 We had heard rumours of a secret crack in the canyon wall through
133 which the Indians fled to the outside when pressed by enemy invaders. Immediately we planned to investigate. When Vesnor learned that we intended to go through the passage, he shook his head gravely and cautioned, "Indian moccasin walk trail all right. Think white man shoe no good." Before we were through with the experience we agreed with him.

After a walk of several miles, we stood in a side gorge and gazed up at a long triangular crevice that split the wall to an incredible height. A ledge of stone, fifty feet above the canyon floor, seemed to form the base from which the crack rose to an apex. We realized that this might prove a little more dangerous than some of our other ventures—but if the Indians went through, so could we. It would be worth the climb to stand under the open sky free from sharp, enclosing walls.

[41] Two Indian ladders (logs on which crosspieces of heavy sticks were tied with leather thongs) took us up to the stone ledge. The loose rungs, giving under our feet, swayed the logs threatening to spill us. Shaky from our tussle with the ladders, we pulled ourselves up, single file, onto the stone ledge and faced the entrance to the crevice through which ran the old Indian trail. And behold! this was not the base of the crack at all, but its center—the fissure continued downward so deep into the earth that we could not see the point where its sides met. The trail, a mere edge of stone clinging to one of the close-set walls, ran through the narrow crevice midway between the top and the distant bottom.

Mr. Burnett took one look at the precarious trail, then scrambled down the ladders as fast as he dared to solid ground, where his dog anxiously awaited him. How deserted we felt when he left us to face the dark passage alone! I began to realize that we might encounter unsurmountable difficulties in that thin crack before it landed us somewhere "up above." We stood peering into its darkness, wondering what force had cut this vertical chasm through solid stone. Had a river come in from the plateau, carving its way through the sandstone wall, then disappeared? Or had an earth tremor split the stone apart? A few yards ahead the jagged walls

2:Iliff Y-5 (ca.1901) 1954 NT14 Plateau Yumans NT14
Havasupai

Fortunately, this tribe, unlike the roving Indians of the desert region, had never come in serious conflict with the United States Army. Had they done so, I am inclined to think the Havasupai may have won, at least the first bout. For an American soldier, confronted by enemy whose armor resembled buckskin nightshirts, and whose shields—their only protection from bullets—were tanned deerskins, would have been so convulsed with laughter that he could not fire a shot.

However, the Havasupai had one weapon that no enemy laughed off—their poisoned arrows. Juices extracted from the Jimson weed and other toxic plants, combined with the poison of scorpions and poisonous insects, cemented to the arrow tip with glue from roasted soapweed leaves, made a deadly weapon. They were expert marksmen, and if the flesh was penetrated by one of these poisoned arrows, there was no known antidote.

At the approach of the enemy, women and children scurried up the wall to their huge stores of food on a higher level, saved for just such an emergency. Men fought from their homes until driven from the canyon floor, some retreating to the fort to shoot arrows at the pursuers or to roll stones down upon them. Others took to the ledges along the walls, running ahead of the desert pirates, slaughtering them with poisoned arrows. But many, according to the Indians, retreated to this ledge with its little scooped-out rooms in which ammunition and food could be stored and the wounded cared for. Crossfire from the fort and this ledge could annihilate the invaders in this wider section of the canyon, which held the main part of the village. Protected by their armored men and their shield-bearers, the Havasupai warriors descended for hand-to-hand fighting, while archers slaughtered the fleeing enemy from stations along the walls.

By nightfall, the canyon was cleared. Women and children scrambled down from their high perches, joining the men in caring for the wounded, cleaning up the village, cremating the dead and repairing, as best they could, the damage. Then they held the victory dance, as bloodchilling as had been the conflict itself.

3:James T-5 (ca.1900) 1903
NT14 Plateau Yumans NT14
Havasupai

should the man born with a mental advantage over his fellows exercise that advantage any more than the man born with a physical advantage? We have not quite ceased to worship the Sullivans, the Corbetts, and the Fitzsimmonses, and, where we have, we have transferred our worship to the intellectually strong, many of whom are no more worthy our homage than the prize fighters. So now it is the intellectually strong who prey upon the intellectually weak, and, as in the physical conflict, it is inevitable that the weak "go to the wall." In simple cunning the Havasupai Indian may be our superior, but in deep craft he is "out of the field." His bow and arrow tipped with obsidian or flint pitted against our repeating rifle; his rolling of heavy rocks opposed to our Gatling guns; his mule and burro against our iron horse; and his pine torch against our electric light, — all demonstrate him to be in his intellectual minority, or at an intellectual disadvantage. He makes a fine figure in our romances, but I sadly fear that the knell of his doom has sounded, and that a few generations hence he will be no more.

Wallapai and Havasu Canyons, far more than the Grand Canyon, meet the popular idea as to what a canyon is. Their walls are narrow and precipitous, and one staying in their depths must be content with a late sunrise and an early sunset. Just above the rude bridge before described are several natural reservoirs of water. Here the canyon is not more than from one hundred and fifty to two hundred and fifty feet wide. This close proximity of the walls, which fairly overshadow one, compels one to feel his insignificance far more than when he stands in the wider and more comprehensive vastness of the Grand Canyon.

butcher knife in the other and strikes indifferently at the squash, turning it around and at different angles the while. In a few moments chips, as it were, begin to fall into the cooking pot, and after the exterior is cut and hacked in every direction the cook begins to slice it into the pot. When well cooked, it is eaten without any other improvement than a little salt.

Corn and beans are plentiful with them, and both are as delicious and tender as any I have ever tasted elsewhere.

Mescal is one of their chief foods. It is made by them exactly as the Wallapais make it. That fibrous portion of the plant that cannot be treated in this manner is boiled, and the drink therefrom, when fresh, is a sickish-sweet liquid, that, however, might soon become agreeable. This liquid is of a dark brown color, and when boiled for a long time becomes a species of thin molasses.

The Havasupais know no process of fermentation so far as I have been able to learn, and the elders of the people long objected to the coming of the white man because one of the bad things he brought to the Indian was whiskey and other intoxicants.

Quail and ducks abound in various parts of the Havasu Canyon region. Even to this day many of the latter are shot, for sale to the white man, with the arrow instead of the gun. The Havasupais claim that the arrow is far less liable to scare away the flock than is the loud report of a gun, so they keep up their practice with the antiquated bow and arrow, and some of them show wonderful skill in their use. I have often placed a ten-cent piece in a notched stick and enjoyed watching the young men as they fired their arrows at it at a distance

3:James T-6 (ca.1900) 1903
NT14 Plateau Yumans NT14
Havasupai

223 of fifty paces. Their skill was such that on one occa-
411 sion I lost a dollar thus within half an hour.

At one time in February I found the canyon alive
136 with quail, the whirring of whose wings met us on every hand as we rode along from hawa to hawa.

I am told there is no fish in Havasu Creek above Mooney Falls, but from the base of this fall on to the river both large and small fish are abundant. I rather doubt this, as on the occasion of my attempt to reach Beaver Falls down the course of the creek from Mooney Falls I saw no fish, nor signs of any.

One of the Havasupais tells me that mountain sheep may be seen on the northern rim of the Grand Canyon in small bands. When the snow is deep upon the Buckskin Mountains and the Kaibab Plateau they descend to the more temperate regions of the canyon where grass may be found in plenty, and then the Paiuti and Paiced Indians kill them, drying the flesh for later use. This they do regardless of a territorial law, which forbids even an Indian killing mountain sheep at any time. The Indian regards his as a prior right, existing long before there was any territorial legislature, and he acts accordingly.

224 Mountain lions, wildcats, lynxes, coyotes, badgers, deer, and antelope, with an occasional mountain sheep and bear, are the larger quarry of the Havasupai hunters. The deer and antelope they find in the open grassy glades of the forests on the canyon rim and reaching towards the desert. The other game is generally found in the recesses of the canyons or on the slopes of the far-away mountains of Hue-han-a-
[103] patch-a (the San Franciscos), Hue-ga-wool-a (Williams Mountain), or Hue-ga-da-wi-za (Red Butte).

The
181 women excel the men in such dexterity,
461 being wonderfully apt and graceful in the use of the hand in making baskets or preparing food. The men are expert
[224 hunters, and constantly practice marks-
411] manship with bows and arrows and rifles. They are doubtless endowed with elements of progression, as shown by their habit of always adopting and profiting by improvements or advantages of other nations, when once convinced of their superiority. The women are certainly
[562 duller and less impressionable than the
151] men, but far more thoughtful, and apparently quite sage in some of their reflections, their opinion being at times sought, in ultimate cases, by the latter.

342 The habitations of the Ha-va-su-pai are of three kinds, two of which I have already mentioned. Often, those above the river are conical, half-underground structures, made by supporting three forks against one another, laying lesser poles around these in a circle, and covering the whole with sticks, flags, grasses, and dirt, extending the front out in the shape of a veranda; or, again, by combining the square and the round forms in one, the latter serving as a retreat during severe weather. Anciently, the stone house, of good proportions, and not unlike the Pueblo architecture, except from the fact that it never exceeded one story, was sometimes used, as attested by ruins, of which several plans occur among my notes.

342 Strangest of all, however, with their
172 lesson for the speculative archæologist, are the little cliff dwellings of stone and mud, before mentioned. Though ruder than the wonderful remains of similar character in other parts of the West, ruins which have attracted world-wide attention and speculation, they are identical with them, and are the only examples of recently-built and still-occupied cliff dwellings. Furnishing clews
343 to the uses of the lesser rooms and
172 niches in the prehistoric cliff ruins, are the hundreds of little *caches*, or grana-

412 spades, and picks, of wood, bone, horn, or iron, — the last procured by trade, — are used, as well as the universal *kă-ta*, or digging stick. In planting, the long [241] prod or spud of cedar is used, a convenient branch being left short near the lower end, with which the implement is pressed down with the left foot.

492 Within the past few years the introduction of horses among the Ha-va-su-[177] paí has necessitated rude saddles, bridles, whips, spurs, lassos, and hobbles. Among these things, only the bridles and spurs sometimes differ from those of other Southwestern Indians. An efficient though extremely primitive bridle is made of a little hard-wood stick, a small strap of buckskin being attached to either end of it, and passed tightly under the chin of the animal; and two long thongs of light material serve as reins. Equally primitive is the spur. It is made from a fork of some hard, elastic wood, the stems of which are fastened to either side of the foot, and the base sharpened into a sort of prod.

● 411 Their weapons in war and chase are rude, knotty clubs of hard wood; pikes about four feet long, of the same material, sharpened and hardened at the point in the fire; beautifully finished bows and arrows, both wooden and iron tipped, and somewhat longer than those in use among the Pueblos. Slings were formerly used, although now only to a [526] limited extent, being principally seen as toys or playthings of the children. It seems almost paradoxical that the Ha-va-su-paí — least acquainted with civili-zation perhaps, of any Indians in the [177] United States — should universally possess repeating rifles of the most improved models and an abundance of ammunition. Destructive alike of life on the one hand, and of primitive defensive usages, on the other, the gun has not, however, displaced the ruder weapons which I have described.

611 A most curious fact, and a very sig-614 nificant one in the consideration of the

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